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ABSTRACT

Data were collected on 211 undergraduates who were followed by Learning Disabled Student Services (LDSS) at the University of Massachusetts/Amherst during the academic year 1988-1989. Additional data on educational backgrounds were collected for 80 members of the LDSS population, to define variables important in predicting college outcomes. Subsamples of academically high- and low-achieving learning-disabled students were contrasted. Forty percent of the students were female and 60% were male. Ninety percent of the students were of traditional college age, and over 80% were white. Transfer students made up 23% of the population. A disproportionate number of students had majors in fine arts, social science, and education. The high school class rank and the Scholastic Aptitude Test scores were lower than the University average. The majority of LDSS students had a long-standing history of learning problems and had received special education in high school. However, less than half of those students chose to identify their special needs at the time of college admission. Students with language-based learning disabilities experienced greater academic difficulty than students with nonverbal processing problems. Reasons for these findings are analyzed, and it is concluded that factors such as social/emotional maturity differentiate high- and low-achieving learning-disabled students. Includes five references. (JDD)

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PROFILE OF UNIVERSITY STUDENTS WITH
LEARNING DISABILITIES

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Abstract

Recently, the number of individuals with learning disabilities in postsecondary education has increased. However, there has been little systematic research profiling the characteristics of this population. In what ways are learning disabled college students different from their nonlearning disabled peers? What are the educational backgrounds of learning disabled university students? In what ways do successful and unsuccessful learning disabled students differ? This paper reports the results of a study describing learning disabled university undergraduates on selected academic and nonacademic variables. The report includes three sections: 1. a comparison of learning disabled and nonlearning disabled undergraduates; 2. a profile of the educational backgrounds of learning disabled undergraduates; and 3. the characteristics of low and high achieving learning disabled students. Implications for college admissions, for the development of academic support services, and for future research concerning students with learning disabilities in postsecondary education are discussed.

PROFILE OF UNIVERSITY STUDENTS WITH
LEARNING DISABILITIES

INTRODUCTION

During the 1980s, the number of learning disabled students entering higher education steadily increased. Both PL 94-142, the Education for All Handicapped Children Act (1975), and Section 504 of the Vocational Rehabilitation Act (1973), have ensured the right of handicapped students to an education. Since 1975, more students have been identified as learning disabled than any other category of handicaps under PL 94-142; the child count for this category from 1976-77 to the present has surpassed the count for all other handicapping conditions combined (U.S. Department of Education, 1987). Children and youth with learning disabilities comprise 41 percent of all students receiving special education under the provisions of PL 94-142. Within the past several years, the proportion of students with learning disabilities in higher education has expanded from .3 percent in 1983 to 1.2 percent in 1987 (HEATH, 1988). Nationwide, the number of learning disabled students in postsecondary education is estimated to be 20,000 (HEATH, 1988). Colleges and universities are now challenged with the task of educating learning disabled students.

There has been little research concerning college students with learning disabilities, particularly those matriculating at competitive colleges and universities. Moreover, issues concerning the definition of learning disabilities have plagued the field (Lerner, 1989). One purpose of this preliminary research project was to compare and contrast the characteristics of students identified as learning disabled with the general undergraduate population at the University of Massachusetts/Amherst in order to identify variables which might differentiate learning disabled and nonlearning disabled students: In what ways are students followed by Learning Disabled Student Services (LDSS) different from the general undergraduate population at the University of Massachusetts/Amherst? As well, data were collected concerning the educational backgrounds of a sample of the LDSS population to define variables important in predicting college outcomes. Toward that end, subsamples of academically high and low achieving learning disabled students were contrasted: How do high and low achieving learning disabled students differ on selected academic, psychoeducational, and personal variables? Ultimately, information generated by our studies will assist in developing a model describing learning disabled students at the college level. The findings will be applicable in defining learning disabilities among adults, assisting in college admission decisions, in arranging appropriate college level support services, and in informing elementary and secondary educational systems as to the direction of their programming efforts to ensure the future college success of learning disabled children and adolescents.

At the University of Massachusetts, Amherst, the Learning Disabled Student Services (LDSS) began providing services in 1985 to approximately 50 students. This number has increased to approximately 300 actively enrolled students with a documented history of learning disabilities. Over the past five years, more than 500 students have sought academic support services through the LDSS. Enrollment of learning disabled students at the University of Massachusetts/Amherst is compatible with other similar postsecondary institutions (HEATH, 1988). Since the LDSS's beginning, the staff has generated a database to track students' performance and to conduct research concerning the characteristics of university students who chose to identify themselves as learning disabled. This paper is a descriptive study of the population of students followed by Learning Disabled Student Services at the University of Massachusetts in Amherst.

COMPARISON OF STUDENTS IDENTIFIED AS LEARNING DISABLED AND THE
UNDERGRADUATE POPULATION AT THE UNIVERSITY OF MASSACHUSETTS ON
SELECTED ACADEMIC AND PERSONAL VARIABLES

The first question concerned the differences between university students identified as learning disabled and their nonlearning disabled peers.

Method

Data were collected on 211 undergraduates who were followed by Learning Disabled Student Services (LDSS) at the University of Massachusetts/Amherst during the academic year 1988 - 1989. LDSS follows approximately 1% of the 19,545 undergraduates enrolled at the school. Learning disabled students were identified prior to admission or when they experienced difficulty with the college curricula. Information concerning the learning disabled and nonlearning disabled undergraduate populations were obtained from the Office of Institutional Research and Planning at the University of Massachusetts/Amherst. The number of non-identified learning disabled students in the undergraduate population is not known.

Results

ENROLLMENT INFORMATION

Male/Female Ratio: Undergraduate enrollment at the University of Massachusetts/Amherst in general is 51% female and 49% male. For the entire LDSS population (211), 40.3% are female and 59.7% are male. The LDSS follows a disproportionate number of male and female students relative to the general population at the University of

Massachusetts/Amherst. In addition, more females are followed by LDSS than would be expected given estimates on sex differences among learning disabled students indicating that there are about 2 1/2 times more boys than girls with learning disabilities (U.S. Department of Education, 1987). Male/female ratios may differ among adult college students with learning disabilities. Some types of learning disabilities may not be manifested until adulthood. Females may have milder learning disabilities which are not identified until college, or they may not be identified as learning disabled at the same rates as male students due to lower academic expectations for females in elementary and secondary schools.

Age: The age range for the LDSS sample was 18 to 42 years (Median=20.6). Most students (90%) were of traditional college age (Females: Mean=21.1, SD=3.4; Males: Mean=21.5, SD=3.5).

Ethnicity (based on voluntary self-report):

	LDSS	UMASS
	%	%
Black	3.3	2.2
Hispanic	2.8	1.7
White	83.4	67.8
Am. Indian or		
Alaskan Native	.9	.2
Asian or		
Pacific Islander	.9	1.5
Non-Resident Alien	.5	4.4
Unknown	8.1	22.0

Students followed by the LDSS are predominantly White.

Transfer Students: Of the LDSS population 23% were transfer students (n=49). At the University of Massachusetts, undergraduate transfer students make up 6% of the population. LDSS follows a greater proportion of transfer students than would be expected given the number of transfer students at the University in general ($\chi^2=81$; $p<.001$). Transfer students may not have qualified for admission to the University of Massachusetts after completing high school, and require academic support services when enrolled later in their college careers.

Class Distribution:

	Freshmen	Sophomores	Juniors	Seniors	Unclassified
LDSS	18%	24%	49%	3%	4%
UMASS	23%	24%	25%	24%	4%

Class is determined by the year of graduation of the cohort with whom the student was admitted. The number of students followed by the LDSS probably increases during the second and third years of college because the students have experienced academic difficulties, and then identify themselves as learning disabled to receive support services. In addition, policies regarding the admission of learning disabled students at the University of Massachusetts may have changed contributing to the uneven distribution across the 4 classes.

LD University Students

Major:

	LDSS	UMASS
Humanities & Fine Arts	20%	13%
Natural Science & Math	2%	6%
Social & Behavioral Science	25%	15%
Arts & Sciences/Other	21%	22%
Education	11%	5%
Engineering	1%	10%
Food & Natural Resources	14%	12%
Health Sciences	1%	2%
Management	1%	10%
Physical Education	4%	3%

LDSS follows a disproportionate number of students majoring in fine arts, social science, and education. Math, engineering, and management students are underrepresented. Some majors may be perceived as an easier course of study among learning disabled students or learning disabilities have a greater impact on academic achievement in courses of study requiring strong language-based skills. Perhaps the rates of referral across majors reflect faculty awareness of support programs for learning disabled students at the University.

High School Rank in Class:

LDSS (n=108)

Mean %ile = 42.15; SD = 19.61

UMASS

Mean %ile = 24.8; SD = 16.5

LD University Students

The Mean percentile for high school rank in class for the LDSS population was significantly lower (- 1 Standard Deviation) than the Mean percentile rank in class for University undergraduates in general. Moreover, high school rank was not available for all learning disabled students. For students enrolled in special education, high school rank in class may not be computed or reported.

*SAT Scores:

LDSS (n=160)

UMASS

SAT Verbal X = 440; SD = 90

SAT Verbal X = 491; SD = 90

SAT Math X = 470; SD = 92

SAT Math X = 542; SD = 94

*Data regarding nonstandard SAT administration were not available.

SAT scores for the LDSS sample tended to be lower than for the general University of Massachusetts/Amherst population, but the difference was not statistically significant. SAT scores were only available for 160 learning disabled students. Handicapped students are not required to submit SATs when applying to the University of Massachusetts (Chapter 344), and those handicapped students with low SATs may have chosen not to submit the scores.

College Achievement:

Grade Point Average: Mean GPA for the LD population = 2.46;
SD = .59.

GPA Distribution:

<2.0

2.0 - 2.9

3.0 - 3.9

12%

70%

18%

Discussion

In summary, 1% of the population of undergraduates at the University of Massachusetts/Amherst are identified as learning disabled. Students followed by Learning Disabled Student Services are predominantly White males of typical college age. Fine arts, social science, and education majors are most frequently seen whereas math, management, and engineering majors are underrepresented in the LDSS population. Juniors are overrepresented across the four classes. A comparatively large number of transfer students are served by the LDSS. As a group, the high school rank in class for the LDSS population was significantly lower than the average for the University. SAT Verbal and Math scores for the LDSS population tended to be lower than the average for the University. At the time of this study, 12% of the learning disabled students were failing according to their GPAs.

Ryan and Heikkila (1988) suggested that college admission models may need to be revised for learning disabled students pursuing a postsecondary education. Two of the most important predictors of college achievement have been shown to be SAT scores and high school rank in class, which are measures reflecting academic aptitude and academic motivation normed on nonhandicapped populations. Further research is needed concerning the importance of those two variables to predict the success of learning disabled students in college and to determine other relevant psychoeducational variables. The next step in profiling the characteristics of learning disabled students at the University of Massachusetts was a review of the educational backgrounds of the learning disabled population.

EDUCATIONAL BACKGROUND CHARACTERISTICS OF LEARNING DISABLED STUDENTS
AT THE UNIVERSITY OF MASSACHUSETTS

The second part of the descriptive study was a review of the historical records of a sample of identified learning disabled students followed by Learning Disabled Student Services (LDSS).

Method

Data were collected from the LDSS files which contained background information documenting the handicaps and special education histories of the learning disabled students at the University of Massachusetts/Amherst. Learning disabled students were identified prior to admission or when they experienced difficulty with specific courses. Of the LDSS population, 80 students (Sex: 24% female, 76% male; Mean age = 22 years) were recruited to participate in this study.

Results

High School Background:

High School:

Public: 79%
Private: 13%*
Parochial: 6%
GED: 2%

*Of the LDSS students who attended private schools, 44% attended special private schools because of their learning needs.

High School Special Education History:

Thirty-six percent of LDSS students never received special education services in high school. Presumably, those students were

identified as having learning problems in college. Learning problems may have become apparent for some learning disabled students when the academic demands increased at the college level. Sixty-four percent of the LDSS files which were reviewed indicated that the student had received special education services during high school. Of the 64% with a history of special education in high school, 47% identified themselves as learning disabled at the time of admission while 53% did not. There was no significant difference in the proportion of females (36%) and males (64%) who identified themselves as learning disabled upon admission.

Of the students whose LDSS records contained information regarding a high school special education history, 55% recorded the total number of years that the student received special education in high school.

Years	%
1	15
2	8
3	19
4	58

Number of years in special education during high school might be a rough measure of the severity of the student learning disabilities, but the need for special education is defined by the community as well as student needs. Many students in the LDSS apparently had a longstanding history of learning problems. Of the students who received special education in high school for less than 4 years, 27% were no longer receiving services in grade 12 while 73% were still enrolled in special education throughout their senior year. In grade

12, the amount of special education service varied: 20% of the students received minimal "monitoring" services or accommodations in the regular class; 53% spent up to 1/4 of the school day receiving special education services; and 27% attended special classes or schools. The high school IEPs of the LDSS sample described various types of special education services: Tutoring "as needed" to supplement regular courses was the most frequently reported service, followed by remedial instruction in reading, language arts, and math, and finally, monitoring which included course modifications, such as untimed tests.

IQ Scores:

Intelligence test scores were obtained from the Wechsler Scales for 54 of the 80 student records reviewed:

		-1SD			+1SD	
SCORES:	≤70	71-85	86-100	101-115	116-130	≥131

VERBAL

Mean=111.4			19%	43%	35%	3%
SD=11.5			62% average		38% +1SD	

PERFORMANCE

Mean=104.5	3%	6%	28%	37%	19%	7%
SD=21.1	9% -1SD		65% average		26% +1SD	

FULL SCALE

Mean=110		6%	11%	54%	22%	7%
SD=13		6% -1SD	65% average		29% +1SD	

Sixteen learning disabled students (30%), had significantly higher Verbal than Performance IQ scores (VIQ 15 points $\geq$ PIQ); five learning disabled students (9%) had significantly higher Performance than Verbal IQ scores (PIQ 15 points $\geq$ VIQ). Sixty-one percent of the sample did not have statistically significant differences between their Verbal and Performance IQ scores on the Wechsler Scales.

For students with significantly higher Verbal than Performance IQ scores, the Mean Grade Point Average = 2.44; SD = .88. Students with a significantly higher Performance than Verbal IQ score had a Mean GPA = 1.89; SD = 1.36. The Mean GPAs for the 2 groups were significantly different ($t=2.75$; $p<.05$). Those findings suggest that language-based learning disabilities may have a substantial negative impact on academic achievement.

Current LDSS Service:

Services provided to the students in the LDSS sample at the time of this study were as follows:

- | | |
|--------------------------|------|
| 1. None: | 25% |
| 2. Tutoring: | 19% |
| 3. Course modifications: | 25%* |
| 4. Both (3+4): | 31% |

*Including adjustments in foreign language requirement, such as substitute courses. GPA for the students receiving LDSS support services at the time of this study: Mean = 2.33; SD = .84. GPA for students not receiving LDSS support services: Mean 2.14; SD =1.06.

Follow-Up:

The status of the 80 LDSS students in the sample was reviewed after the Spring semester of 1989. Fourteen of the 80 students (18%) had graduated. Eight students were on academic probation (10%), and thirty-eight were enrolled in good standing (47%). Twenty students, 25% of the sample, had withdrawn for various reasons.

A comparison of the reasons for withdrawal for the students in the LDSS sample and all undergraduates at the University of Massachusetts/Amherst follows:

	LDSS	UMASS
Withdrawals (all reasons)	25%	32.9%
Transfers	10%	9.3%
Academic	35%	30.8%
Personal	35%	19.5%
Unknown (failure to enroll)	10%	23.6%
Administrative (temporary)	10%	16.7%

For the LDSS sample, the percentages of academic and personal withdrawals, particularly the latter, suggests that the students followed by the LDSS are indeed a troubled group. Learning disabled students may opt for a personal withdrawal because of social/emotional difficulties or to avoid an academic dismissal.

Discussion

The educational records for a sample of LD students (n=80) were reviewed. The quality of the historical records varied considerably, making it difficult to obtain information for a sufficient number of students across all variables. Most students in the sample graduated from public high schools. The majority of LDSS students had a

longstanding history of learning problems and received special education in high school. However, less than half of the students with a history of learning disabilities chose to identify their special needs at the time of admission. Confidentiality, the stigma of the "learning disability" label, and the negative perceptions of associations with special education may affect incoming students' willingness to disclose their handicaps and seek assistance through the LDSS. Students with evidence of a language-based learning disability, that is, Performance IQ significantly higher than Verbal IQ, had a significantly lower mean GPA than did students whose testing revealed a pattern of verbal conceptual strengths and nonverbal problem solving weaknesses. Follow-up after one year revealed that relative to withdrawal rates at the University of Massachusetts, a disproportionately large number of the LDSS sample had withdrawn from school for academic and personal reasons.

Notable about the findings was the evidence that students with language-based learning disabilities experienced greater academic difficulty than students with nonverbal processing problems. Those findings are compatible with results reported by Goldberg and Zern (1982). Psychoeducational diagnostic information must enter into admissions decisions as well as into support program planning. If admitted to college, a student with a language-based disability would need access to remedial courses and support services emphasizing listening, speaking, reading, and writing. It is noteworthy that 36% of the sample had no record of special education prior to college, and were referred to Learning Disabled Student Services when they started to experience academic difficulties as adults in college.

Students identified as learning disabled during adulthood may differ in important ways from students identified as learning disabled earlier in their educational development. The age at which a learning disability impacts academic functioning is an important variable for future consideration. A considerable number of students in the LDSS withdrew from the University of Massachusetts for "personal reasons." Perhaps they were unable to meet the demands for independence and social responsibility at a large school. There is general agreement that social/emotional problems associated with learning disabilities place the individual at risk for adjustment problems throughout the life span. Motivation and social/emotional maturity need to be assessed for college admissions decisions. Interviewing prospective learning disabled students may be informative about their readiness for a college social environment. Counseling, career guidance, and peer support groups would be needed support services.

Finally, it is important to note that not all learning disabled students were unsuccessful. In fact, the majority of students followed by LDSS were in good academic standing. The next step in defining the characteristics of learning disabled students at the University of Massachusetts was a comparison of high and low achieving learning disabled students.

CHARACTERISTICS OF LOW AND HIGH ACHIEVING LEARNING DISABLED STUDENTS IN A UNIVERSITY SETTING

This section contains the preliminary results of a study for which low and high achieving learning disabled students, grouped according to grade point average, were compared on selected academic and nonacademic variables.

Method

Of the LDSS population, 80 students were recruited to participate in a descriptive study to examine selected psychoeducational variables. Grade Point Averages (GPA) of that sample were reviewed to form groups of low and high achieving learning disabled students; eighteen students were failing (GPA < 2.0), and for comparison, eighteen students with the highest GPAs were identified. Low and high achieving groups were compared on several selected measures.

Results

Low Achieving Group:

High Achieving Group:

GPA:

Range:	.60 - 1.95	2.72 - 3.51
Mean:	1.44; SD: .65	3.0; SD: .7

Sex:

Female	17%	33%
Male	83%	67%

LD University Students

Age Range: 18 - 42 yrs.

20 - 36 yrs.

Mean Age: 22.47

23.2

Median Age: 20

23

Class:

Freshperson: 27%

8%

Sophomore: 40%

31%

Junior: 20%

15%

Senior: 13%

38%

Unclassified: 0

8%

Transfer Students: 33%

31%

High School History:

Special Education: 65%

73%

IQ Scores for high and low achieving students:

VIQ Mean: 112.57; SD: 12.46

111.15; SD: 12.61

PIQ Mean: 109.64; SD: 14.16

106.31; SD: 21.42

FSIQ Mean: 112.5; SD: 12.39

109.62; SD: 14.8

*VIQ > PIQ: 21%

38%

*PIQ > VIQ: 14%

8%

*Discrepancy of 15 points or more

T-test for difference between Full Scale IQ scores for the low and high achieving learning disabled groups = 1.93, $df=25$; $p>.05$. The small sample size makes it difficult to interpret those findings. Perhaps IQ test scores which are used in diagnosing learning disabilities are not good predictors of academic performance in college. Other personality variables, such as social maturity and motivation, need to be assessed for high and low achieving groups of learning disabled students.

SATs:

Verbal Mean: 428; SD: 88

448; SD: 99

Math Mean: 457; SD: 84

423; SD: 86

T-test for difference between SAT Verbal for low and high achieving learning disabled groups = 1.36; $p>.05$. There were no statistically significant differences between the groups.

T-test for difference between SAT Math for low and high achieving learning disabled groups = 2.54; $p<.05$. Low achieving students in this sample of learning disabled college students had higher SAT Math scores. The low achieving students may not have enrolled in courses of study which capitalized on their strengths.

Discussion

Because of the small sample size, it is impossible to draw firm conclusions about differences between low and high achieving learning disabled students. However, the data suggest some trends for future investigation.

It may be that the usual predictors of academic success, IQ and SAT scores, are not sufficient for predicting the college performance of learning disabled students. Perhaps other factors, such as social/emotional maturity, differentiate low and high achieving learning disabled students, and should be considered college admission decisions for learning disabled individuals. High school rank in class may be a rough indication of academic self-concept and motivation. Interviewing prospective learning disabled students as part of the admissions procedure may be informative as to their readiness to meet the demands of college. Study skills courses, counseling, and peer support groups are needed services for learning disabled college students.

The data also suggest that verbal conceptual abilities may be critical to success in college. In this sample, 38% of the high achieving learning disabled students had Verbal IQ scores significantly higher than Performance IQ scores. As well, the SAT Verbal scores of the high academically achieving group tended to be higher than the scores of the low achieving group. Language-based learning disabilities may have a pervasive negative impact on academic achievement. Verbal conceptual abilities need to be assessed for learning disabled college applicants. Psychoeducational diagnostic information would be important in planning support services. Remedial courses in college should all aspects of language development: listening, speaking, reading, and writing.

SUMMARY

This preliminary work on the characteristics of learning disabled college students has raised a number of questions. We are continuing to collect and analyze data comparing learning disabled and nonlearning disabled undergraduates, differentiating high and low achieving students, and predicting college outcomes. How does the college student with learning disabilities compare with age and university peer groups? How can we support the learning disabled student in higher education and increase the possibility of a positive outcome?

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